(12) UK Patent Application (19) GB (11) 2 026 839 A

(21) Application No 7912430
(22) Date of filing 9 Apr 1979
(23) Claims filed 9 Apr 1979
(43) Application published 13 Feb 1980
(51) INT CL³ A24B 15/16
(52) Domestic classification A2C 20J2
(56) Documents cited
GB 1320471
GB 1294416
GB 1289437
GB 1122894
(58) Field of search
A2B
A2C
A2Q
(71) Applicant
Carlos Roberto Bustamante,
5303 Alta Vista Road,
Bethesda,
Maryland 20014,
United States of America.
(72) Inventor
Carlos Roberto Bustamante
(74) Agents
D. Young & Co.

(54) **Process and apparatus for manufacturing a smokable coffee product**

(57) A process and apparatus for manufacturing a smokable coffee product from whole coffee cherries 10, comprising compressing whole coffee cherries 10 in a press 20 in order to dehydrate the cherries 10 and form a block 30 of broken cherries, comminuting the dehydrated block 30 into particles in a grinder 34, roasting the particles in a roaster 40 to provide an intermediate brewable coffee product of enhanced shelf life, hydrating the intermediate product and substantially evaporating the product to provide a smokable coffee product.

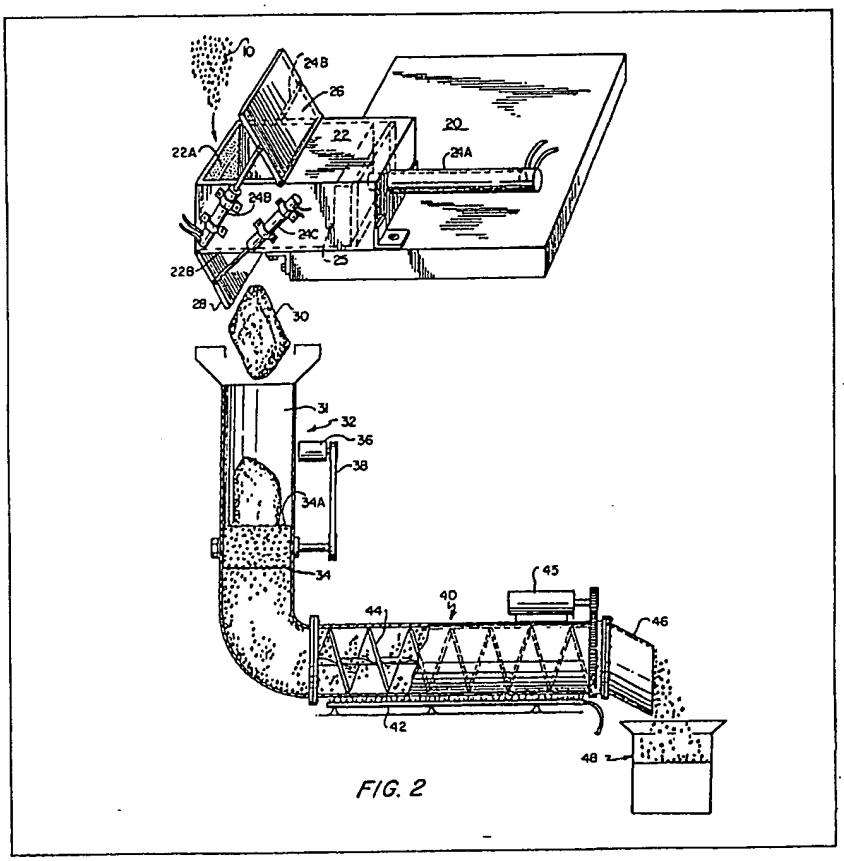

FIG. 2

GB 2 026 839 A

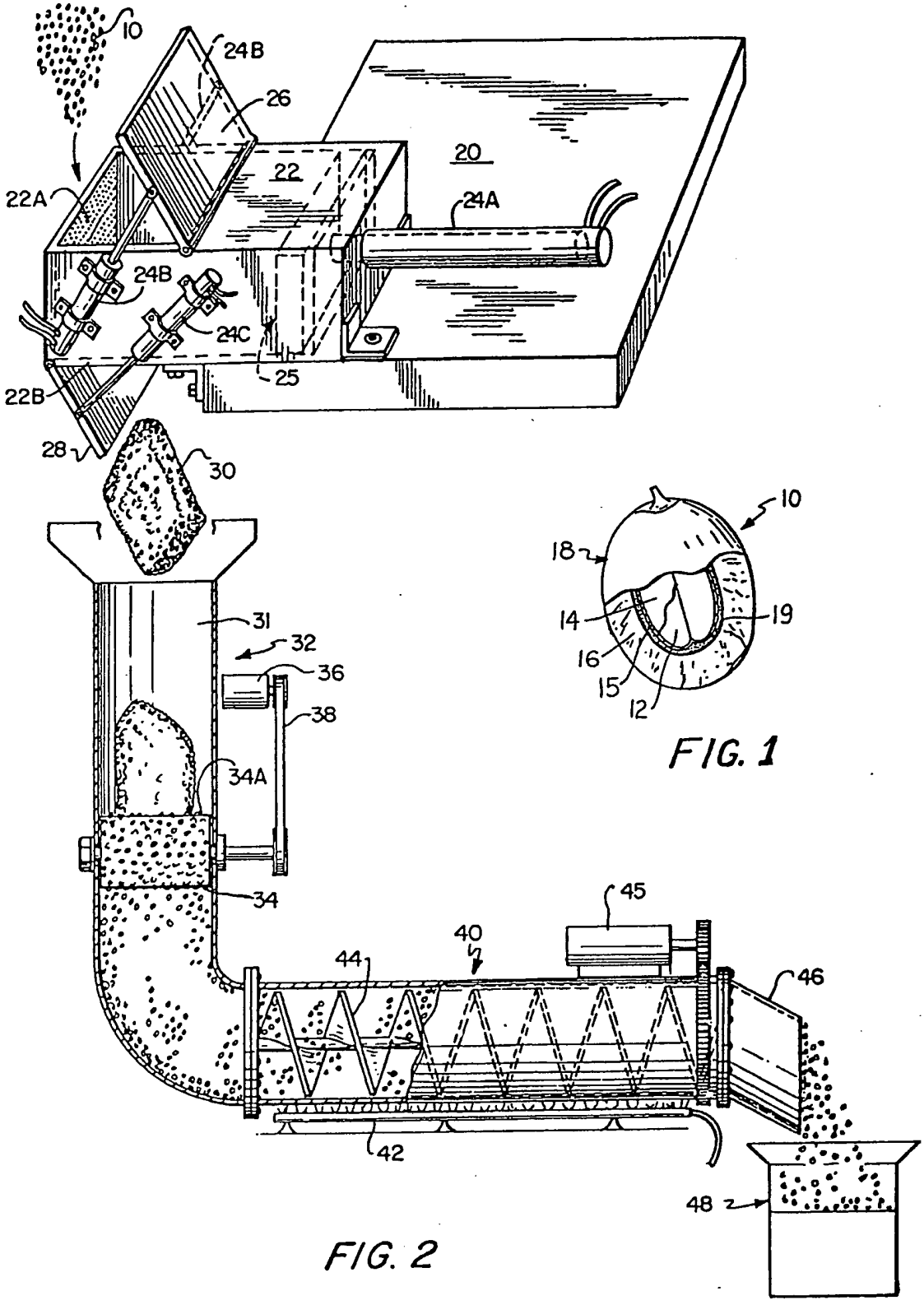
10
24B
26
22
20
22A
24A
24B
24C
25
22B
28
30
31
32
36
38
34A
34
45
40
44
46
42
48

FIG. 2

10
18
14
19
16
15
12

FIG. 1

SPECIFICATION

Process and apparatus for manufacturing a smokable coffee product

This invention relates to a process and apparatus for manufacturing a smokable coffee product from the whole coffee cherry.

Smoking, to many people, is a highly desirable personal habit or practice despite the mounting body of evidence that the smoking of tobacco in cigarette form in particular has many undesirable and potentially hazardous effects on the smoker.

Programs have been instituted in an attempt to produce less hazardous cigarettes by the treatment of tobacco and tobacco products to remove as many undesirable components and constituents therefrom as possible without destroying the flavour of the ultimate smokable product.

For example, there appear to be certain key characreristics which consumers consider a requisite for acceptability of cigarette products. for example, if the cigarette does not have a fragrance which is generally tobacco-like or at least similar to the fragrance of burning tobacco, then the product is considered unacceptable. Also the character of the smoke must be other than that of a burning paper and more like wood smoke or the like and produce both moistness and fullness in the mouth of the consumer smoking the final product.

In addition to the foregoing, other efforts have been made to develop tobacco substitutes including, for example, the use of chemicaly treated coffee bean hulls and the like such as described in U.S. Patent 3796222. This earlier patent discloses a number of relatively complex chamical treatments of coffee bean hulls in order to cause specific chemical reactions and extractions of the components of the coffee hulls to produce a smokable coffee product which is usable either alone or as disclosed in the patent, preferably in a mixture with natural tobacco.

However, in the patent just identified, as well as in other smoking products, expensive chamical reagents such as humectants are all considered to be a required component of the ultimate product and accordingly, greatly increase the cost of the product.

According to the present invention there is provided a process for making a coffee product from whole coffee cherries, comprising the steps of applying a compression force to said whole coffee cherries of sufficient magnitude to dehydrate said cherries to a selected degree, comminuting said dehydrated cherries into particles, roasting said particles to provide an intermediate brewable coffee product of enhanced shelf life, and hydrating said intermediate brewable coffee product and subsequently evaporating same to provide a smokable coffee product.

The applicant has discovered that fermention of the pulp surrounding the coffee bean between the parchment and the cod can be precluded by partially dehydrating the entire coffee cherry, promptly grinding the entire cherry into particles, and promptly roasting or processing the particles in a conventional manner to form a coffee product.

At this stage of the process, the formed coffee product is in primarily a brewable form from which to produce a beverage.

In order to render the beverage style intermediate product more smokable, it has been discovered by the applicant that a further step is essential in order to give the intermediate product characteristics which produce a more desirable smokable product to enhance flacour, burning qualities, and aroma.

Simply stated, the additional treatment of the intermediate coffee product formed from the whole coffee cherry as above described, is provided by hydrating the intermediate product and subsequently evaporating the moisture from the product at which time the dried end product is in the form of granules or shredable sheets which may be placed into cigarettes, pipes, or other smoking paraphernalia and smoked as a pure smoking product or, if desired, mixed with tobacco in any desired proportions.

There is no need, however, to admix the smokable coffee product of the present invention with tobacco since it is a smokable product with all of the desirable characteristics of fullness of flavour, a sense of moist flavour in the mouth, and desirable aroma and character in the smoke produced therefrom.

The dehydration of the whole coffee cherry in a preferred embodiment is performed by a mechanical type press of any suitable design. The coffee cherries are subjected to a compressional force in the press which dehydrates the coffee cherries to a selected degree and forms the cherries into blocks or pellets.

The blocks or pellets are then immediately introduced into a grinder to disintegrate them into particles.

The particles are then immediately roasted or processed in a conventional manner. The process of the present invention to this point is an integrated process in which steps are carried out in succession without any significant periods between steps. In this way, the coffee cherries are precluded from fermenting because of the combined effect of the successive steps of the integrated process over the time frame in which they are performed.

Therefore, at this point in time, an intermediate roasted product has been produced which if desired, can be brewed into a beverage and which has an enhanced shelf life in that form.

Because of the present process, the intermediate product can be produced rapidly and economically in the country of origin of the coffee cherries and then shipped in the intermediate product form for end use throughout the world either as a beverage or as a smokable coffee product.

When it is desired to further process the intermediate coffee product into a smokable coffee product, then the intermediate product is hydrated, such as by mixing the product with water in a suitable blender, for example, proportions of fifty percent water and fifty percent coffee product by volume, and then permitting the hydrated slurry to dry by evaporating the water therefrom on a drying surface. The resulting product is preferably broken up into granules of a desired size and consistency from the

dried state at which point in time the product is fully smokable either in its pure form or as a mixer with conventional tobacco and the like.

The pulp of the whole coffee cherry is known to contain carbohydrates, salts and proteins dissolved in the aqueous phase. All of these may have effect on the final characteristics of the intermediate product. Thus, in the intermediate product prior to the hydration and evaporaton steps of the present invention there are present water-soluble carbohydrates which have been carmelized during roasting to provide a coating around each roasted particle since the roasting has taken place with those natural juices of the whole coffee cherry remaining after the pressing and comminution. Consequently, the natural flavours and aromas are trapped within each particle by these coatings. Accordingly, by hydrating the roasted particles constituting the intermediate product, these coatings are apparently dissolved and upon evaporation certain volatile constituents of the intermediate product are apparently removed, thereby providing the smokable coffee product with unique qualities of smell, taste and texture which render it desirable as a smokable coffee product.

Since the intermediate coffee product of the present invention has an increased shelf life and may in fact be stored unpressurized for long periods without any significant detrimental effect on the flavour, it is noted that the present invention permits the coffee product to remain in this form over a period of one or more years such that depending upon the conditions of the world market, persons may select whether to make use of the intermediate product as a beverage or to process it further into a smokable product. This gives coffee producing nations more economic flexibility with regard to the end use of their product than ever before thought to be possible.

An embodiment of the invention will now be described, by way of an example, with reference to the accompanying drawing, in which:-

Figure 1 is a cross-section of a whole coffee cherry; and.

Figure 2 is a diagrammatic view of a preferred embodiment of the processing apparatus of the present invention.

Referring in detail to Figure 1 there is illustrated á whole coffee cherry generally designated 10. The cherry 10 consists of inner beans 12, covered by an inner shell of chaff 14, parchment 15 surrounding the chaff 14, a layer of mucilage 19 surrounding the parchment 15, pulp 16 ciontiguous to the mucilage 19 and an outer shell or cod 18.

As stated hereinbefore in making conventional hot coffee beverages which are known today the mucilage 19, pulp 16 and the outer shell or cod 18 are removed because of the tendency of each of the above constituents to spoil or ferment.

The process and apparatus of the present invention make it possible to utilize the entire coffee cherry 10 including the mucilate 19, the parchment 15, the pulp 16 and cod 18 to produce a coffee product with controlled flavour and increased yield per cherry.

The process of the present invention can best be understood by reference to Figure 2. As illustrated therein a plurality or predetermined quantity of whole coffee cherry 10 are introduced at a first station into a mechanical press and pelletizer generally indicated at 20.

The press consists of a chamber 22 with inlet and outlet openings 22A, 22B, respectively. A hinged door 26 is provided over inlet opening 22A and a similar door 28 is provided over outlet opening 22B. Each of the doors may be actuated between open and closed positions by suitable hydraulic pistons 24B and 24C, respectively.

A compression piston head 25 is provided in one end of chamber 22 and is suitably coupled through the end wall of chamber 22 to a hydralic drive piston 24A.

The hydraulic pistons 24A, 24B, 24C are operated in synchronism to compress the coffee cherries 10 and thus dehydrate and pelletize the same in the following manner. With the piston head 25 in the position shown, piston 24B is actuated to open the door 26 and thus permit the introduction of a predeterimed quantity of cherries 10 through opening 22A into chamber 22. At this time door 28 is closed. Door 26 is then closed by deactivating piston 24B and piston 24A is actuated to drive piston head 25 to the left as viewed in the drawing. Piston head 25 pushes against the cherries 10 and compresses the same, thus forming a pellet or block 30 of broken whole coffee cherries 10. The piston head 25 is then retracted permitting the block 30 to drop to the next processing station through door 28, which is opened in synchronism with retraction of piston 25.

For reasons stated hereinbefore by varying the compressional force generated by piston 25 the flavour of the resulting coffee product can be controlled. For example, if a pressure of X psi is applied to hydraulic cylinder 24A, a strong flavoured coffee may result. However, if a pressure of Y psi is applied, a more mellow flavour might result. This change in flavour, as stated hereinbefore, is believed to be caused by the controlled removal of selected quantities of the oils and chemical substances in the aqueous phase within the whole coffee cherry 10.

Block or pellet 30 consists of dehydrated whole coffee cherries 10.

Suitable means may be provided in chamber 22 for receiving the liquid squeezed out of the coffee cherries 10 in chamber 22.

The second processing station consists of a funnel shaped cylindrical conveyor chute 31 and a grinder 32. The pellets 30 enter the open end of the conveyor 31 and drop into contact with grinder rotor 34 which disintegrates the dehydrated coffee cherries into small particles.

Grinder rotor 34 has protuberances 34A thereon for disintegrating the cherries and is driven via a belt and sprocket drive 38 by a motor 36.

The ground particles consisting of all the constituents of the whole coffee cherry 10 are than fed to a third station where they are roasted by a roaster 40.

Roaster 40 may be of any conventional type and by way of example may include a screw conveyor 44 driven by a motor 45 and a gas heater 42 to provide for the progressive and continuous roasting of the

ground coffee particles.

A conduit 46 is provided for feeding the roasted coffee to a packaging station 48. A final grinding station may be placed, if desired, between the conduit 46 and packaging station 48.

The intermediate coffee product *ICP* at the packaging station 48 may be maintained in its beverage producing form for relatively indefinite periods of time until such time as a decision is made by the producer to either market it as a beverage base or to further treat it and produce a smokable coffee product therefrom.

In order to produce the smokable coffee product from the intermediate coffee product ICP, the present invention requires only that the intermediate coffee product ICP by hydrated for example, fifty percent of the product ICP and fifty percent of water by volume is hydrated in a blender and after five minutes of agitation is permitted to evaporate by spreading it on an evaporating surface or the like. The resulting dried product is then broken up into particles of desirable size and placed either in a cigarette configuration or into the bowl of a conventional pipe. At this point, the resulting end product need only be ignited by an ordinary match or the like and smoked as if it were tobacco.

If desired, various proportions of the smokable coffee product of the present invention may be mixed with natural tobacco to provide taste variations to suit a given smoker.

Accordingly, as can be seen from the foregoing a process by which whole coffee cherries may be treated selectively and in controllable time frames to produce either a beverage base or a smokable coffee product and in which the beverage base has a sufficiently indefinite shelf life to provide to the producer a valuable economic choice with regard to whether or not the end product shall be a beverage base or a smokable product to thereby provide him with a powerful economic tool in the world market.

CLAIMS

1. A process for making a coffee product from whole coffee cherries, comprising the steps of applying a compression force to said whole coffee cherries of sufficient magnitude to dehydrate said cherries to a selected degree, comminuting said dehydrated cherries into particles, roasting said particles to provide an intermediate brewable coffee product of enhanced shelf life, and hydrating said intermediate brewable coffee product and subsequently evaporating same to provide a smokable coffee product.

2. The smokable coffee product when produced by the process of claim 1.

3. A process for making a coffee product from whole coffee cherries, comprising the steps of breaking said whole coffee cherries up into particles, dehydrating said particles to a selected degree, comminuting said dehydrated particles in finer particles, roasting said particles to product an intermediate brewable coffee product of enhanced shelf life, hydrating said intermediate product, and evaporating the water of hydration and other volatile constituents from said coffee product to produce a smokable coffee product.

4. The smokable coffee product when produced by the process of clam 3.

5. A process for making a coffee product from whole coffee cherries, substantially as hereinbefore described with reference to the accompanying drawing.

6. Apparatus for carrying out the process claimed in claims 1 to 5 substantially as hereinbefore described with reference to and as illustrated in Figure 2 of the accompanying drawing.

Printed for Her Majesty's Stationery Office by Croydon Printing Company Limited, Croydon Surrey, 1980.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.